

CLAIMS:

1. A bandpass filter of dual-mode comprising a dielectric block having a top surface, a bottom surface and first to fourth side surfaces, a first metal plate to be in a floating state substantially entirely formed on the top surface of the dielectric block, a second metal plate to be grounded formed on the bottom surface of the dielectric block, and means for providing a coupling between the dual-mode.

2. The bandpass filter as claimed in claim 1, wherein the dielectric block has substantially rectangular prismatic shape.

3. The bandpass filter as claimed in claim 2, further comprising a first exciting electrode and a second exciting electrode formed on the bottom surface of the dielectric block.

4. The bandpass filter as claimed in claim 2, further comprising a first exciting electrode formed on the first side surface of the dielectric block and a second exciting electrode formed on the second side surface adjacent to the first side surface of the dielectric block.

5. The bandpass filter as claimed in claim 3, wherein the providing means is achieved by a removed portion exposing a part of the bottom surface of the dielectric block.

6. The bandpass filter as claimed in claim 5, wherein the removed portion is positioned at a corner of the second metal plate.

7. The bandpass filter as claimed in claim 5, wherein the removed portion is positioned at an inner of the second metal plate.

8. The bandpass filter as claimed in claim 5, wherein the removed portion has a triangular shape.

9. The bandpass filter as claimed in claim 5, wherein the removed portion has a rectangular shape.

10. The bandpass filter as claimed in claim 5, wherein a dimension of the removed portion is a sector form.

11. The bandpass filter as claimed in claim 7, wherein the removed portion has a circular shape.

12. The bandpass filter as claimed in claim 5, wherein the number of the removed portion is plural.

13. The bandpass filter as claimed in claim 3, wherein the providing means is achieved by a coupling control stub formed on the bottom surface of the dielectric block and physically connected to the second metal plate.

14. The bandpass filter as claimed in claim 13, wherein the coupling control stub has a rectangular shape.

15. The bandpass filter as claimed in claim 13, wherein the coupling control stub has a triangular shape.

16. The bandpass filter as claimed in claim 13, wherein the coupling control stub has a circular shape.

5 17. The bandpass filter as claimed in claim 13, wherein the providing means is also achieved by a removed portion exposing a part of the bottom surface of the dielectric block.

10 18. The bandpass filter as claimed in claim 3, wherein the second metal plate is in contact with a first edge of the bottom surface and a second edge of the bottom surface adjacent to the first edge, the first exciting electrode is in contact with a third edge of the bottom surface opposite to the second edge, and the second exciting electrode is in contact with a forth edge of the bottom surface opposite to the first edge.

15 19. The bandpass filter as claimed in claim 18, wherein the first exciting electrode being further in contact with the first edge and the second exciting electrode being further in contact with the second edge.

20 20. The bandpass filter as claimed in claim 18, wherein the first exciting electrode being apart from the first edge and the second exciting electrode being apart from the second edge.

25 21. The bandpass filter as claimed in claim 3, wherein no metal plate is formed on any one of the first to fourth side surfaces of the dielectric block.

22. The bandpass filter as claimed in claim 4, wherein the first exciting

electrode is prevented from contacting the second metal plate by a first removed portion exposing a part of the bottom surface of the dielectric block formed along a first edge between the bottom surface and the first side surface of the dielectric block, and the second exciting electrode is
5 prevented from contacting the second metal plate by a second removed portion exposing another part of the bottom surface of the dielectric block formed along a second edge between the bottom surface and the second side surface of the dielectric block.

10 23. The bandpass filter as claimed in claim 22, wherein the providing means is achieved by a third removed portion exposing still another part of the bottom surface of the dielectric block.

15 24. The bandpass filter as claimed in claim 1, wherein a dimension of each the top and bottom surface of the dielectric block is square.

25 25. The bandpass filter as claimed in claim 1, wherein the providing means is achieved by removing a corner of the dielectric block.

20 26. The bandpass filter as claimed in claim 25, further comprising a first exciting electrode and a second exciting electrode formed on the bottom surface of the dielectric block.

25 27. The bandpass filter as claimed in claim 26, wherein no metal plate is formed on any one of the first to fourth side surfaces of the dielectric block.

28. A bandpass filter of dual-mode comprising a dielectric block having a

top surface, a bottom surface and first to fourth side surfaces, a first metal plate formed on the top surface of the dielectric block, a second metal plate formed on the bottom surface of the dielectric block, first and second exciting electrodes formed on the bottom surface of the dielectric block,
5 and means for providing a coupling between the dual-mode.

29. The bandpass filter as claimed in claim 28, wherein the dielectric block has substantially rectangular prismatic shape.

10 30. The bandpass filter as claimed in claim 28, wherein the providing means is achieved by a removed portion exposing a part of the bottom surface of the dielectric block.

15 31. The bandpass filter as claimed in claim 28, wherein the providing means is achieved by a coupling control stub formed on the bottom surface of the dielectric block and physically connected to the second metal plate.

32. The bandpass filter as claimed in claim 28, wherein the providing means is achieved by removing a corner of the dielectric block.

20 33. The bandpass filter as claimed in claim 28, wherein no metal plate is formed on any one of the first to fourth side surfaces of the dielectric block.

34. The bandpass filter as claimed in claim 28, wherein a dimension of
25 each the top and bottom surface of the dielectric block is square.